

MISSOURI CONSERVATIONIST

VOLUME 83, ISSUE 7, JULY 2022
SERVING NATURE & YOU





When was the last time you connected with nature?

Spending time in nature, including conservation areas, urban parks, and in green space, can ease stress levels. Just 20 minutes outside can give your brain an energy boost comparable to a cup of coffee. Let nature — which is free and close by — be your go-to for self-care and health.

It's time to make that connection again, and **Never Lose Touch**.



For ways to reconnect with nature, visit mdc.mo.gov/NeverLoseTouch.

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MISSOURI CONSERVATIONIST



ON THE COVER

American beaver

FRANK FICHTMUELLER |
DREAMSTIME.COM

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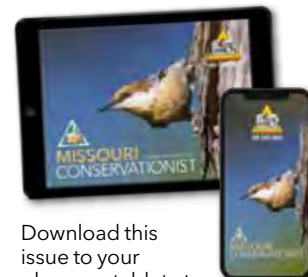
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Inbox



Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email Magazine@mdc.mo.gov or write to us:

MISSOURI
CONSERVATIONIST
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BEST MAGAZINE

The Missouri Conservationist is the best magazine I have ever had delivered to our home! We certainly enjoy reading each one and we always learn something new. Keep up the good work!

Jackie Burgess
Independence

POISON IVY

I just read *Poison Ivy* by Jessica Marie Baumgartner [June, Page 10], and although it was filled with a lot of interesting and useful information, I felt it necessary (as a retired dermatologist) to clarify some misconceptions. Studies have shown the plant's oil takes 20 minutes to penetrate the skin, so if you find yourself in a patch of poison ivy, you have 20 minutes to wash it off. Because it's an oil, a product that gets rid of oil is best. I often recommended carrying baby wipes. Since water and oil don't mix, simply using water may dilute the oil, but won't dissolve it.

Jerome Aronberg, MD Brentwood

UP FRONT

Up Front is the first thing I read when our *Missouri Conservationist* arrives. The words never fail to inspire and challenge me to open up to the world that needs our study and care. This time I sobbed when I read about Scout [May, Page 3]. I am so fortunate to have been surrounded by animals and birds for the entire more than 70 years of my life. In July 2021, I said goodbye to Duke, my 17-year-old Australian shepherd. Duke was loyalty. Now I live with a hole in the fabric of my being, and strive every day to be loyal. It is very hard work.

Janie Vale via email

WATCHING BIRDS

Matt Seek's insightful article [*From Binge-Watching to Birdwatching*, May, Page 11] on birdwatching, complemented by Noppadol Paothong's photographs, accurately reflected the ways people become birders, and the progression that often occurs as experience and appreciation deepen. As a lifelong birder, I was particularly impressed with the authenticity of Matt's article. He wrote from experience and from the heart. Thanks for continuing to provide wonderful articles of this caliber.

Rick Thom Jefferson City

My wife and I have put out bird feeders for the last eight or nine years. From late September until the end of May, it's all the usual suspects, but this year, much to our surprise, new visitors have shown up — rose-breasted grosbeaks. I read up on their migration and we are a little off the beaten path. I hope they continue to return. Our 3-year-old granddaughter loves watching, and I quiz her about who's who at the feeder. We love your magazine; I just wish it was weekly.

Rick Carr via email

TEACHABLE MOMENT

I always enjoy reading the magazine and looking at the photos, but the Q/A about the central newt in the May issue brought back a great memory for me [*Ask MDC*, Page 7]. My great-nephew, Luke, loves to go on walks around their property where we found one last year. It turned into a teachable moment for this retired science teacher as we went through a key together to identify it.

Linda Dudley via email

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The Missouri Department of Conservation protects and manages the fish, forest, and wildlife of the state. We facilitate and provide opportunity for all citizens to use, enjoy, and learn about these resources.



Want to see your photos in the Missouri Conservationist?

Share your photos on Flickr at
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or email Readerphoto@mdc.mo.gov.



1 | Eastern
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by **Kurt Kirchner**,
via Flickr

2 | Raccoon by
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via email

3 | Lon Sanders
Canyon
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via Flickr



Want another chance to see your photos in the magazine?

➔ In the December issue, we plan to feature even more great reader photos. Use the submission methods above to send us your best year-round pictures of native Missouri wildlife, flora, natural scenery, and friends and family engaged in outdoor activities. Please include where the photo was taken and what it depicts.

TAYLOR LYNN PHOTOGRAPHY



Up Front

with Sara Parker Pauley

✱ A latecomer to the TV series *Yellowstone*, I'm drawn to this drama depicting the modern Wild West. The real wild West has its own challenges, with record drought and wildfires wreaking havoc, while growing in frequency and intensity. In 2022 so far, over 29,050 wildfires have burned more than 2 million acres.

For decades, MDC has joined forces with our Western partners battling these rampant blazes. In 2021 alone, 48 MDC fire-fighters joined colleagues on the fire lines in Oregon, California, Colorado, and Montana.

Missouri used to be the wild West when it came to uncontrolled wildfires. More than a million acres burned annually across the Ozarks, according to MDC Fire Supervisor Ben Webster, himself a veteran of several Western firefighting deployments and a man with the look of an extra, fresh off the *Yellowstone* set. Then came the 1930s constitutional mandate giving the Conservation Commission wildfire suppression oversight, with MDC staff shouldering the largest load in fighting wildfires for the next few decades. Today, local fire departments respond to more than 95 percent of all Missouri's wild blazes, thanks in part to training and equipment grants from MDC and the U.S. Forest Service. This expanded local capacity, improved technology, and education have greatly reduced Missouri's unwanted fires. In 2021, an estimated 20,320 acres burned. (Learn more about Missouri's fire tower history on Page 22.)

We've come a long way from the old days in Missouri. Here's to hoping our Western friends see better times as well.

Sara Parker Pauley

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Nature LAB

by Dianne Van Dien

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

RESOURCE SCIENCE

Long-Term Patch-Burn Grazing Study

✳ **Applied on a rotating schedule, patch-burn grazing uses fire to stimulate plant growth, and cattle to influence how the plant community develops.**

“Using this management,” explains MDC Grassland Ecologist Tom Thompson, “you’ll potentially have a shifting mosaic of habitat types. Short vegetation where the cattle have grazed, intermediate vegetation where they grazed the previous year, and tall vegetation in plots not recently grazed. And different wildlife species rely on each of those structural types.”

While initial studies on MDC prairies showed patch-burn grazing provided plant diversity similar to that on prairies managed with just patch burning and no grazing, the Missouri Prairie Foundation and other stakeholders voiced concerns about whether certain plant species might be negatively impacted by cattle over a longer period. To find answers, MDC launched a 15-year study on five prairies in 2015–2016 to assess how patch-burn grazing is influencing specific plant species and habitat structure.



Only 0.5 percent of Missouri’s original tallgrass prairies remain, so careful management is vital. On MDC lands, managers use prescribed fire, haying, and brush control to maintain the remnant prairie. Without management, these areas would gradually fill in with shrubs and trees.

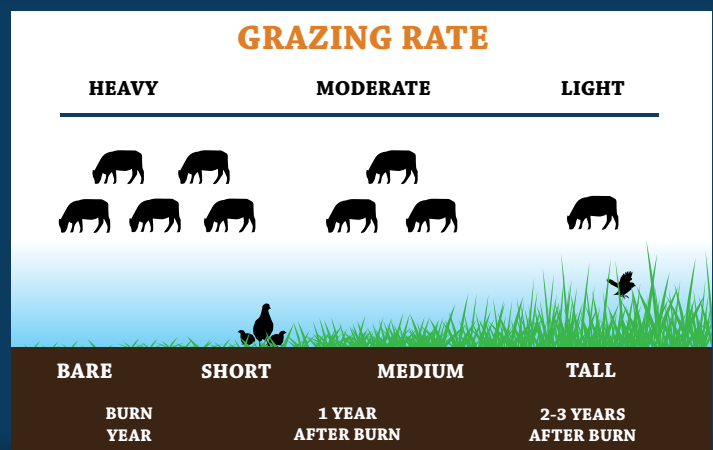
Fifteen-year study will provide data for adaptive management of remnant prairie and other grasslands

Three times per growing season, researchers evaluate each study site. MDC staff look for 47 specific plant species, documenting them as present or absent. They also collect data on changes to vegetation structure. Outside contractors assess plant diversity and cover. The data is reviewed at five-year intervals to see what impacts patch-burn grazing is having.

“We aren’t going to know everything now,” says Thompson, “but our first five years of data show some plant responses that we’d like to evaluate further. We’ll be discussing these with internal and external stakeholders and determining changes to how we’re implementing patch-burn grazing, then seeing how those changes affect the plant community. We’re hoping within the 15 years to complete three to four cycles of patch-burn grazing so we can see its long-term effects.”

Patch-Burn Grazing at a Glance

Patch-burn grazing attempts to mimic natural processes that existed before European settlement. By burning different portions of prairie on a rotating schedule, a mosaic of different vegetative growth stages will result, providing short, intermediate, and tall growth that can serve the varying habitat needs of different species of birds, and potentially insects and other wildlife. Cattle (historically bison) tend to graze mostly in the recently burned portions to consume the nutritious grasses that emerge after the burns, while the areas burned in previous years get time to recover.



In Brief

News and updates from MDC



SMALLMOUTH SLAM

MDC ENCOURAGES ANGLERS TO TEST THEIR SKILLS IN NEW FISHING RECOGNITION PROGRAM

➔ MDC and the Missouri Smallmouth Alliance (MSA) invite anglers to pursue a "Smallmouth Slam" by fishing the state's 12 special management areas for bass to receive related pins and medallions.



"Missouri's special management areas provide excellent smallmouth bass habitat," explained MDC Fisheries Programs Specialist Andrew Branson. "These areas have regulations to help smallmouth bass populations increase and to allow more fish to grow to a quality size."

The Smallmouth Slam is divided into three levels:

- Bronze: Catch a smallmouth bass from six of the 12 special management areas and receive a certificate and bronze pin.
- Silver: Catch a smallmouth bass from nine of the 12 special management areas and receive a certificate and silver pin.
- Gold: Catch a smallmouth bass from all 12 special management areas and receive a certificate, gold pin, and medallion.

All pins and medallions awarded to participants have been provided and underwritten by MSA.

"The Missouri Smallmouth Alliance is proud to partner with MDC on this exciting angler recognition program," said MSA President Augustus Knickmeyer. "We expect many river anglers, both veterans and newcomers to the sport, to actively participate in the Smallmouth Slam."

Smallmouth bass of any size caught after March 1, 2022, qualify for a Smallmouth Slam, but any smallmouth bass under 15 inches must be released.

Anglers can complete a Smallmouth Slam entry form each time they catch a smallmouth bass. They may also submit a picture of their fish if they wish, but it is not required.

Once participants accomplish one of the three Smallmouth Slam levels, MDC will verify their submissions and mail them their award. Additionally, anglers can have their successes listed on the MDC website.

For more information on the Smallmouth Slam, visit mdc.mo.gov/smallmouthslam.

continued on Page 6 »

SMALLMOUTH SLAM

(continued from Page 5)



The Smallmouth Slam honors anglers who catch a smallmouth bass in at least six of these 12 MDC special management areas:

- **Big Piney River** (From Slabtown Access to the Gasconade River)
- **Big River** (From the Council Bluff Lake Dam to the Meramec River)
- **Eleven Point River** (From Thomasville Access to the Arkansas line)
- **Elk River** (Entire length of Elk River in Missouri)
- **Gasconade River** (From Highway Y bridge in Pulaski County to Highway D bridge in Phelps County)
- **Jacks Fork River** (From Highway 17 bridge to the Current River)
- **James River** (From Hooten Town bridge to Highway 413/ Highway 265 bridge at Galena)
- **Joachim Creek** (From Highway V bridge to Highway A bridge in Jefferson County)
- **Meramec River** (From Highway 8 bridge to the railroad crossing at Bird's Nest Access)
- **Mineral Fork** (From Highway F bridge in Washington County to the Big River)
- **Osage Fork of the Gasconade River** (From Skyline Drive bridge near Orla in Laclede County to the Gasconade River)
- **Tenmile Creek** (From Highway B bridge in Carter County to Cane Creek)

To learn more about Missouri's smallmouth bass special management areas, go to short.mdc.mo.gov/4i3.

To learn more about MSA, visit its website at missourismallmouthalliance.org.

Ask MDC

Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov
or call 573-522-4115, ext. 3848.

Q: A bobcat came into my yard. It's the first I've seen. Is the population expanding in Missouri?

➔ Despite a reduction in preferred habitat (through hardwood forest clearing and draining of lowlands), Missouri's bobcat population seems to be stable. Currently, Missouri bobcats can be found statewide, with an estimated one bobcat per 6 square miles.

Originally, these cats' range was from southern Canada, throughout the United States and most of Mexico. However, they were extirpated from much of the central United States by 1900 due to habitat loss resulting from intensive agriculture and persecution because of real or perceived attacks on livestock.

Bobcat populations remain steady today, in part because of their reclusive nature. When rabbits, moles, voles, and squirrels are in abundance, bobcats can inhabit many different areas without incident, including areas near human populations. These felines are shy,

but can tolerate the increased noises associated with human developments.

Active both during the night and day, these felines mark their territories with scat, but don't socialize much. Within their ranges, they can travel between 3 and 7 miles nightly. Mating begins in December and litters of two to three kittens are usually born in May and June. Weaning occurs after two months, and young stay with the female until fall or later.

You can read more at short.mdc.mo.gov/4ir.

Q: Recently I noticed monarch caterpillars feeding on the milkweed plants in my yard. But now they're all gone. I haven't seen one chrysalis. What happened to them?

➔ It's possible they're nearby. Monarch caterpillars will go as far as 30 feet away from the milkweed plants to make their chrysalides, which can be hard to see when they blend into vegetation or other hidden places.

Despite the milkweed making the caterpillars unpalatable, quite a lot of predation from birds, wasps, and other insects such as tachinid flies still occurs. Some studies suggest fewer than 6 percent of caterpillars survive to the last instar stage and make it to a chrysalis.

If you fear this may have happened, examine where the caterpillars were feeding on the milkweed leaves. Tachinid flies, once hatched, will leave the caterpillar's dried outer skin. If you see these husks, it's possible the caterpillars were predated.



Bobcat



Monarch caterpillar on common milkweed

to help monarchs, whose populations have fallen precipitously in recent years. Conservationists are strong proponents of using native plants because they provide the largest bulk of the food and nourishment our native wildlife species need to survive. For additional guidance, visit short.mdc.mo.gov/4oq.

Q: What species fly nightly under our dawn-to-dusk light searching for bugs?

➔ According to MDC's bat ecologist, you likely are seeing bats. Urban bats are often seen foraging under light sources because of the insect density. The species would most likely be big brown bats, but other species like eastern red bats, evening bats, and little brown bats are possible.

Some insectivorous birds also are attracted to artificial light. Nighthawks, for example, hunt on the wing at dawn and dusk, snatching up aerial insects, and barn swallows forage on flying insects lower to the ground. Purple martins go to bed at dusk and rarely forage past sunset.

Don't lose hope. It's only July and monarch opportunities still exist. The fall migration through Missouri goes from mid-August through October, so there is still time for Missouri's milkweeds to help the generation of monarchs headed to Mexico this fall.

Planting milkweeds, and protecting them, is a wonderful way

What IS it?

Can you guess this month's natural wonder?

The answer is on Page 9.



Ben Pursley

FRANKLIN COUNTY
CONSERVATION AGENT

offers this month's

AGENT ADVICE

If big fish are what you're after, then catching catfish on the Missouri River is for you. July is a great time to set trot lines on the "Big Muddy" for all three species of catfish. Channel, blue, and flathead catfish can all be caught this time of year in a variety of methods, including pole and line, bank line, throw line, jug line, and the popular trot line. If you're targeting channel and blue cats, try cut bait. If it's flatheads you seek, try live bluegill. Remember, label your lines with your name and address or conservation number and always wear your life jacket. For more information, visit *A Summary of Missouri Fishing Regulations* at short.mdc.mo.gov/Z9n.

WE ARE CONSERVATION

Spotlight on
people and partners

by Angie Daly Morfeld

Lydia Minahan

➔ Lydia Minahan described her childhood as nature-based, and the Anita B. Gorman Conservation Discovery Center served a central role. "Anita B. Gorman became one of my 'happy places' in Kansas City because it's this beautiful pocket of nature and learning in the middle of the city." Minahan remembers exploring the grounds, attending summer camp, and learning survival skills there. She became a volunteer during her high school years.

"Hands in Dirt KC"

While pursuing her master's degree, Minahan worked on an advocacy project to discover and highlight different nature experiences available to Kansas City families. The project eventually evolved into a Facebook page called "Hands in Dirt KC." It highlights free or low-cost activities or adventures, such as visiting the Anita B. Gorman Conservation Discovery Center and grounds, amongst others, that have great walking trails and even hiking access. Minahan is working on her doctorate, hoping to open her own nature-based early childhood facility in Kansas City.

In her own words

"I'm excited to share everything that I have learned with the community in Kansas City and give local kids more access to nature and conservation learning in the future."

📷 by Cliff White



Lydia Minahan pictured
at the Anita B. Gorman
Conservation Discovery
Center in Kansas City.

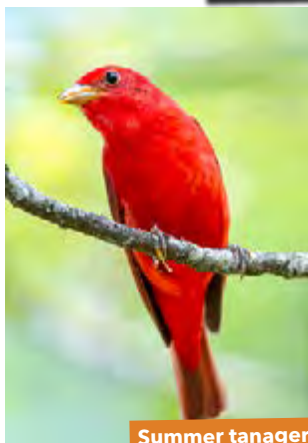
What's **your** conservation superpower?



Great egret



Blue false indigo



Summer tanager

DISCOVER RED, WHITE, AND BLUE IN NATURE

With the Fourth of July weekend coming up, we encourage you to look for some red, white, and blue in nature through a holiday hike, birdwatching, backyard fun, fishing, and other outdoor activities.

Here are some suggestions to get started finding red, white, and blue in nature:

- Red royal catchfly flowers
- Red male summer tanagers
- White beard-tongues or foxgloves
- White great egrets
- Blue false indigos
- Male indigo buntings

Want more information on these and other Missouri plants and animals, including where to find them? Use our handy and helpful MDC online *Field Guide* at mdc.mo.gov/field-guide.

Need suggestions on things to do for outdoor adventures? Find things to do with MDC online at short.mdc.mo.gov/45Z. Offerings include cycling on trails, backyard nature fun, birdwatching, fishing, camping, floating, outdoor cooking, hiking, hunting, nature photography, wildlife watching, and more.

Need to find places to go for outdoor adventures? Visit MDC online at short.mdc.mo.gov/Z9o.

WHAT IS IT? BLACK-NECKED STILT

The black-necked stilt brings a taste of the tropics to the Show-Me State. Not only are their long, salmon-pink legs reminiscent of the flamingos, but they are also second in length only to the flamingos. Black-necked stilts arrive in March and stay through October. They are easy to spot due to their stature and strikingly contrasted black and white plumage. Their call is a loud, brisk *kek, kek, kek*.



Dopplefangers

THE DANGERS OF BEING CONFUSED FOR YOUR "EVIL" TWIN

by Larry Archer





A northern watersnake flattens its head, making it appear more like the venomous northern cottonmouth.

PHOTOGRAPH BY JIM RATHERT

To many people — far too many people — the only good snake is a dead snake. But for many species of snakes, the risk of being needlessly killed is multiplied because of an unfortunate case of mistaken identity — they are often confused for one of Missouri’s five species of venomous snakes.

Whether they share a habitat, color, or behavior, these snakes are often killed by people who mistake them for their venomous counterpart. Sometimes it’s a northern watersnake, confused for the venomous northern cottonmouth because they are both dark, aquatic species. Other times, it’s a prairie kingsnake, which shares some color similarity and a near statewide distribution with the eastern copperhead, Missouri’s most common venomous snake. Even the juvenile western ratsnake, before it grows into its familiar black skin, can find itself on the wrong end of a hoe for being mistaken for the massasauga rattlesnake.

But knowing what to look for, whether it be appearance (skin patterns, size, and shape), location and habitat, or typical behaviors, will help people distinguish the nonvenomous species from their venomous doppelgangers.

Bands and Blotches

Simply being a snake in or near the water is enough to condemn the northern watersnake to the same fear many have of the northern cottonmouth, according to State Herpetologist Jeff Briggler.

“By far these watersnakes and cottonmouths are the two most commonly misidentified snakes near water,” Briggler said. “Everybody believes every snake in the water is a cottonmouth, and it’s about 90 percent of the time or greater that is a northern watersnake.”

While both aquatic snakes share a dark hue, there are characteristics that can help distinguish the two, including physical and behavioral traits and their distribution throughout Missouri.

“Watersnakes have narrow necks,” he said. “And the cottonmouth will have a very defined neck and triangle-shaped head.”

While adult northern watersnakes and cottonmouths are roughly the same length, their bodies are noticeably different, he said.

“Venomous snakes, bodies are just robust and stout,” he said. “Watersnakes are generally more slender and narrow bodied. However, they can flatten their body to appear bigger, which confuses people because when they flatten out and spread their heads, it’s deceptive.”

And while both are dark, a closer examination of each snake’s color patterns can also help distinguish the two species. Snakes that are not a single color will typically have bands — unbroken strips that go from one side of the snake to the other — or blotches, he said.

“If you look at the crossbands on the northern watersnake, they’re the exact opposite of the cottonmouth — narrow at the base and wide in the middle of the back and become squarish blotches along the lower third of the body,” he said.



Northern watersnake

As cottonmouths age, they get darker, making the pattern difficult to distinguish. It may be necessary to rely on differences in behavior. Whereas most nonvenomous snakes will seek to flee from people, venomous species, including the cottonmouth, will often adopt a coiled, defensive posture.

“They’re giving you a warning,” Briggler said. “They’re coiling their body, opening their mouth widely and exposing the white coloration inside their mouth, hence their name. This is a sign to leave the snake alone.”

Stories abound of cottonmouths dropping out of streamside trees on unsuspecting canoeists, but it is, once again, another case of mistaken identity.

“Cottonmouths are not great climbers, not to say they wouldn’t climb into some small bushes on occasion, but they prefer to be on the ground,” he said. “When you see several snakes hanging over these bigger branches up high, a lot of times it’s a female watersnake with several males wanting to mate with her.”

As aquatic species, both take readily to the water, but even there, the two have different swimming styles, Briggler said.

“Northern watersnakes pop their heads up with a little bit of their body exposed, but when threatened they often dive,” he said. “Cottonmouths appear to float on the surface, usually with head held high and most of their body out of the water while swimming.”

In some cases, one of the easiest ways to distinguish between the two is to simply know where you are. There are no known populations of the cottonmouth north of the Missouri River, while the northern watersnake can be found virtually statewide.



The northern watersnake (left and below) can frequently be found in trees near water, a place where the northern cottonmouth rarely goes. As the northern cottonmouth ages, its patterns become less distinct, so one might need to identify it through other means, including its practice of opening its mouth when in a defensive position (bottom).



Northern watersnake



Northern cottonmouth



Prairie kingsnake



Eastern copperhead

The Dangerous Kiss

Sharing a brown or tan base color and near statewide distribution frequently puts the prairie kingsnake on the receiving end of animus meant for the eastern copperhead.

“There’s a strong overlap in distribution, and their habitat is pretty similar,” Briggler said. “They’re both going to be in areas where they can find rodents and other prey.”

Despite sharing a base color, the similarity ends there.

“The pattern is totally different,” he said. “Copperheads have the Hershey kiss or dumbbell shape crossbands along their body. The crossbands are wide along the sides and narrow in the middle, while the prairie kingsnakes will have rows of blotches, not bands, along the body. They also often have a little U- or V-shaped pattern on top of their heads.”

And like the cottonmouth, copperheads have a more triangular head than the kingsnake and are more likely to choose fight over flight.

“When threatened, copperheads are more likely to coil their bodies and hold their ground,” Briggler said. “Kingsnakes are either going to lie still and hope you don’t see them, and then if they think you did, they’re going to do their best to escape potential danger — slither into a hole, under rocks or logs, or into tall grasses.”

The eastern copperhead (bottom left) carries the distinctive “Hershey kiss” patterning and the triangular head, while the prairie kingsnake (upper left) has blotches instead of bands and a narrower head.

The Less Helpful Differences

While appearance, location and habitat, or typical behaviors can help distinguish Missouri’s nonvenomous from venomous lookalikes, there are several distinguishing features that are even more definite but less helpful because they require you to be much closer to the snake than most people like, especially when they are not certain of the snake’s species.

One feature that distinguishes Missouri’s venomous species from nonvenomous are the pupils. Venomous snakes have elliptical, catlike pupils, while nonvenomous snakes have round pupils. Venomous snakes also have a heat-sensing facial pit between the eye and the nostril that allows the snake to detect the body heat of a small mammal or bird, which is the origin of the term “pit viper,” which is absent in other snakes.

Venomous snakes also have fangs, which are used to deliver their venom, but once again, these are not obvious unless the snake opens its mouth, which is a bad time to be too close. Finally, venomous snakes have a single row of scales on the underside of their tails, compared to the double row of scales found in other snakes. The best time to discover this difference is when dealing with shed skin, rather than with a live snake.



Eastern copperhead



Juvenile western ratsnake



Prairie massasauga

In the beginning, the pattern of the juvenile western ratsnake (upper left) and its practice of vibrating its tail to ward off predators causes it to be confused for the massasauga.

Just a Phase

For the western ratsnake, having a venomous doppelganger is just a phase. Because of its blotched color pattern and practice of vibrating its tail, as many nonvenomous snake species do to fool potential predators, the juvenile ratsnake is sometimes confused for the prairie massasauga rattlesnake, Briggler said.

“Just the pattern and the vibration of the tail sometimes makes people confuse it as some type of rattlesnake,” he said. “And when people look it up on the internet, the hatchling western ratsnake looks closest to the massasauga than anything else.”

As the western ratsnake matures, it loses its juvenile markings to become a long, shiny black, ending the resemblance and confusion. The western ratsnake is found statewide, while the massasauga is limited to relatively small tracts of bottomland prairie habitats in north-central and northwestern Missouri.

Live and Let Live

Even when knowing some of the differences between these snakes and their venomous lookalikes, sometimes circumstances — coloration of the snake on sunny versus overcast days, age of the snake, view of the entire snake, etc. — can make an informed identification difficult. That is why Briggler has simple advice for people who cross paths with a snake in the wild they can’t positively identify: leave it alone.

“Walk away,” he said. “You are more likely to be bitten attempting to kill a snake. I mean, the snake is threatened and upset, and it will readily defend itself, so live and let live.” ▲

Larry Archer is the Missouri Conservationist associate editor and editor of *The Amphibians and Reptiles of Missouri*.

Learning More About Missouri’s Snakes

When it comes to things we fear, snakes typically rank near the top of most lists, along with such heavy hitters as public speaking, heights, confined spaces, flying, and death. One way to address the fear of snakes is to become more knowledgeable of them, and MDC is here to help with two publications: *A Guide to Missouri’s Snakes* and *The Amphibians and Reptiles of Missouri*.

The 60-page brochure *A Guide to Missouri’s Snakes* provides readers with general information about snakes and detailed profiles with photos of 43 species of snakes, along with maps showing their range within the state. It is available online at short.mdc.mo.gov/45d and free at many MDC locations. Call ahead for availability. Missouri residents may order a free copy from pubstaff@mdc.mo.gov. Provide the publication title and your shipping address. Call 573-522-0108 to order by phone.

Updated in 2021 for the first time in more than 20 years, *The Amphibians and Reptiles of Missouri* is a 514-page

guide to Missouri’s amphibians and reptiles that provides users with descriptions, distribution, habitats, habits, breeding, and other information on nearly 120 species of native salamanders, toads, frogs, turtles, lizards, and snakes. Illustrated with four-color photos and pen and ink drawings, this soft-cover guide includes updated taxonomy, common names, distribution maps, expanded *Guide to Missouri’s Tadpoles*, and a new section for established, nonnative species.

The Amphibians and Reptiles of Missouri is available for sale at most MDC nature centers, online at mdcnatureshop.com, or by calling toll-free 877-521-8632.



BEAVERS

MISSOURI'S ORIGINAL LANDSCAPERS AND ENGINEERS

by Kristie Hilgedick

PHOTOGRAPH BY CHASE DEKKER | DREAMSTIME.COM





AS HUMANS, WE TEND TO THINK OF RIVERS AS SILVERY singular ribbons coursing their way across the landscape. We imagine them as narrow blue lines meandering across a paper map. But it may be more accurate to contemplate Missouri's rivers — particularly ones still in their natural state — as wide, shallow, braided places where moving streams of water momentarily connect only to dart away again.

Streams and rivers, marshes and ponds — these are the spaces American beavers call home. Aside from humans, few animals have the capacity to sculpt Missouri's landscape the way beavers do.

Engineers by Nature

Biologists consider beavers “ecosystem engineers” because of their capacity to build dams and lodges and excavate dens.

“An ‘ecosystem engineer’ is an organism that alters the landscape in such a way that it's responsible for creating entire ecosystems that other species are dependent on,” explained Michael Byrne, University of Missouri wildlife ecology assistant professor. “Beavers are particularly effective because of their capacity to harness the power of water.”

Nearly 87 percent of Missouri's original wetlands have been lost over time due to human activity. By constructing dams, beavers create and maintain wetlands, providing habitat for countless plants, animals, birds, and insects. These wetlands also benefit humans by improving water quality, retaining sediments, reducing flood impacts, and providing a variety of opportunities for wildlife.

In places where water runs fast or flash flooding is an ever-present threat, beavers often dig an underwater tunnel into the riverbank to create their burrow, noted MDC Scientist Shelby Timm. But in quiet, shallow waters, they are more likely to construct a dam out of downed trees, limbs, vegetation, mud, and sometimes stones.

A lodge — a burrow often surrounded by a watery moat — is meant to be a shelter from inclement weather and predators. Dams are usually constructed some distance away from the lodge for the primary purpose of preventing the flow of water to create a pond. It is the placement of these water-diverting dams that have an outsized impact on our landscape.

A dam in the right place can cause a single channel to split into a braided stream, trigger an island to grow over time, and inundate a water meadow with rich alluvium.

By slowing water down — backing it up and giving it more room to spread — beaver dams reduce stream bank erosion. This also creates more arable land, an added benefit.

When erosion occurs and too much silt is deposited as sediment on a streambed, it clogs the interstitial spaces — the small gaps between larger gravel, pebbles, and cobbles — many species use as refuge.

“Sedimentation reduces critical habitat, and thus the carrying capacity, for not only crayfish, but many other macro-invertebrates,” said MDC Scientist Bob DiStefano. “Since both groups make up a very large part of the prey base in streams, their loss equals less food for wildlife.”



A beaver dam consists of branches and logs placed parallel and with the current, and plastered in place with mud, stones, and sod.

By downing trees and creating ephemeral wetlands, beavers naturally create the early-secessional habitat other species — warblers, herons, amphibians, otters, butterflies, kingfishers, and many more — need to thrive. And because of their ability to add biodiversity to the landscape, sometimes beavers even engineer the perfect niche an endangered species depends on to survive.

By felling some trees and not others, beavers create gaps in the canopy, increasing light to the forest floor and allowing more plants to grow. Where there are more plants, there are more insects, and where there are more insects there are more birds. And bats! A study in Poland found bat activity was “significantly higher in sections of valleys modified by beavers than in unmodified sections,” according to an article published in the *European Journal of Wildlife Research*.

By holding water back and allowing it to slowly seep into the ground, a beaver dam can slowly recharge the area's groundwater and raise the water table — thus sustaining wildlife during dry summer seasons and drought.

Additionally, beaver dams are believed to have either neutral



Beavers are master tree fellers. They can, to some degree, strategically drop trees toward the waterline of their dams, making it easier for them to harvest resources from the safety of the water.



Beavers are intentional about where they place sticks, and often will readjust them until they're satisfied.

or positive impacts on fish stocks. MDC Fisheries Management Biologist Shane Bush said rainbow trout in Crane Creek — one of Missouri's Blue Ribbon Trout areas — need flowing water and gravely riffles to spawn. Those conditions are sometimes thwarted in sections of the creek where beavers have created larger pools with slower moving water, he noted. "Now, this may inhibit some spawning in the section that is dammed, but these areas generally have higher densities of fish, since they create a larger, deeper area of water."

Fly fishermen might prefer faster riffles for floating a fly, he explained. "However, in my experience, the areas behind beaver dams usually hold higher numbers of fish."

Wetlands Systems Manager Frank Nelson believes beavers have the potential to improve the health of grasslands and benefit fens.

"On prairies, where headwater streams have become entrenched, beaver dams can slow the flow of water, allow sediment and nutrients to be deposited, and elevate the water table," Nelson said.

And, if beavers are not naturally drawn to an upland

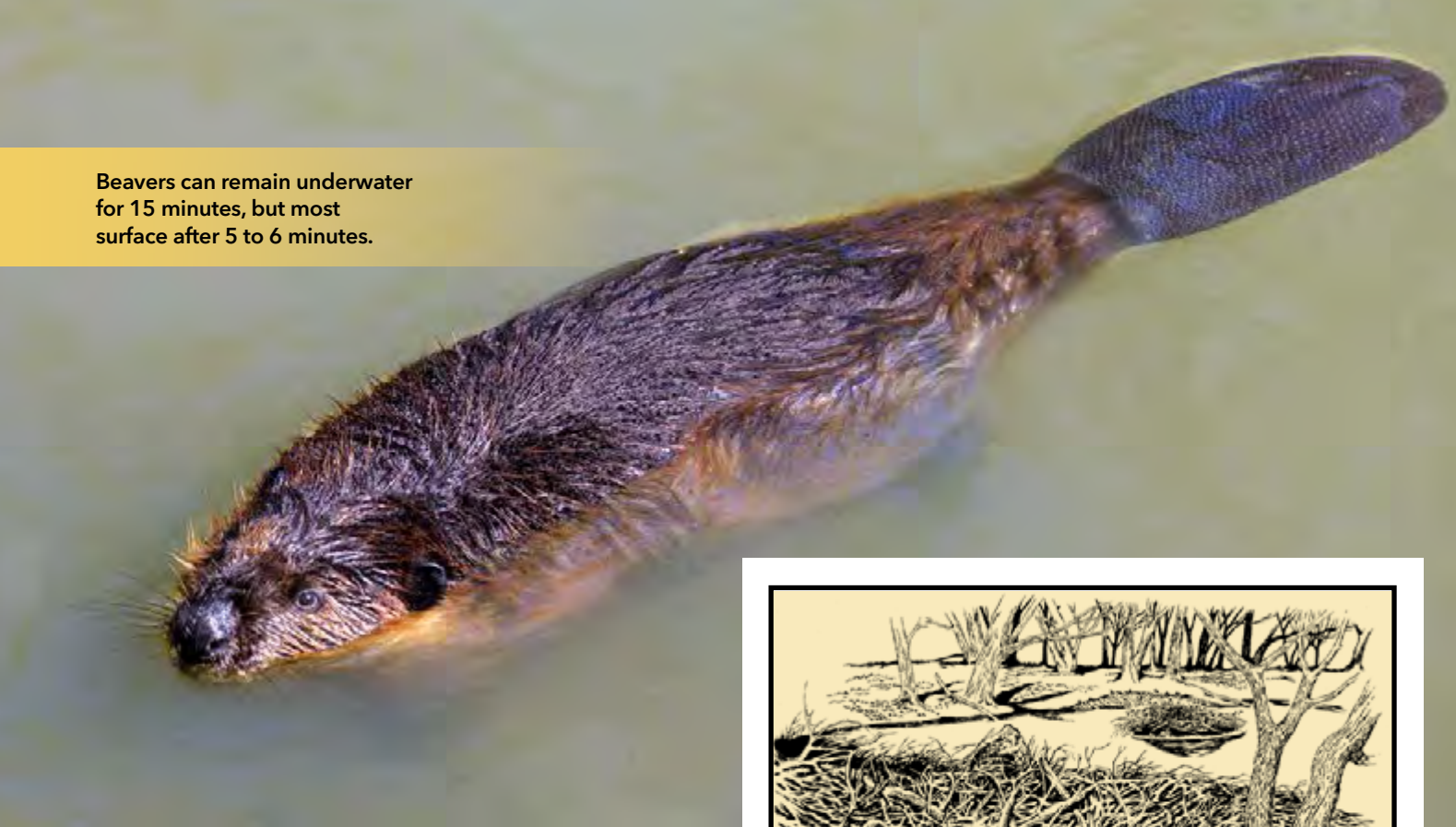
drainageway, scientists can recreate and mimic their impact by installing ephemeral structures — posts and woven willow cuttings, for example — in places where beaver and human conflicts are low and stream restoration is needed.

Nelson is also hopeful maintaining or restoring beavers around fen complexes will help conserve these wetland areas' rich botanical diversity. It is likely that beavers "have been an important part of plant succession over thousands of years and we are now just realizing their significant role in maintaining the biodiversity among these groundwater wetlands of Missouri," he said.

No matter how hard humans work to recreate wildlife habitat, we can't come close to replicating what beavers do for free, MDC Wildlife Damage Biologist Joe DeBold said. "I consider them a keystone species," he said. "So many organisms are attracted to a beaver pool; it's just so beneficial to have."

"Beavers break up the landscape into a mosaic of different habitats," Byrne agreed. "From a wildlife and ecosystem perspective, much of North America is the way it is because of beavers."

Beavers can remain underwater for 15 minutes, but most surface after 5 to 6 minutes.



Meet the Beavers

North America's largest rodents primarily eat bark, particularly the bark of tender twigs and the greenish cambium layer of trees. Beavers along the Missouri River feed on cottonwoods and willows; in the Ozarks, they eat a much wider selection of trees. And beavers are known to eat their own scat — a second chance to extract nutrients from hard-to-digest woody pulp.

But they also eat nonwoody vegetation, such as corn, water-cress, and the rhizomes of yellow pond lilies. And when these messy eaters drop sections of willows and lily rhizomes back into the water, the plants often re-root in the new location.

Because beavers are active all winter, they need a food source. To that end, they cache extra rations in a deep pool near the underwater entrance of their lodge or den or hide them beneath the roots of trees growing along the shore.

But why do they do it? Why do they build dams at all?

Scientists believe it's an adaptation to survive extreme cold, the kind of frigid temperatures capable of freezing a waterbody solid. A dam creates a pool so deep it can't freeze, even in the coldest conditions, preserving an under-the-ice avenue for the beavers to access their food cache even on the coldest days.

Beavers also are prey species, noted MDC Wildlife Damage Biologist Daryl Damron. "When confronted by a coyote or dog, they're helpless, really," he explained. "But the more a beaver expands a pool of water by damming a stream, the safer it is. It gives them access to more and more food and that's why they keep building their dams higher and higher."

Agile in the water, beavers are awkward on land where they are at the highest risk of predation. Although they must collect food on land, they prefer water's protection. An underwater lodge entrance provides further refuge from most predators.



A lodge may be built against a bank, on an island, or in shallow water. But it must be near permanently deep water so a beaver can leave without exposing itself.

Perfectly Adapted

Over the eons, these semi-aquatic mammals evolved numerous adaptations to their cold and watery habitats. For example, their eyes have nictating membranes — translucent eyelids — that act like underwater goggles. Ample lungs and enlarged livers that store oxygenated blood allow beavers to stay underwater for 15 minutes at a time.

But it is the versatility of a beaver's tail that is remarkable. An aid in swimming, beavers use their tails as rudders and to summon quick bursts of speed. A loud slap can startle a predator into revealing its position or provoke a momentary pause — enough time for the beaver to dive out of sight. Capable of storing excess fat, tail size waxes and wanes with the seasons. The tail also regulates temperature. Too hot? It can dissipate heat in the surrounding cooler water. Too cold? It uses a network of arteries called a rete mirabile — Latin for "wonderful net" — to prevent heat loss by cooling the blood before it reaches the tail. And, it makes a handy support prop when cutting down a tree.

Beavers are mostly nocturnal but may come out during the day in remote or protected areas. And they're more active on land in autumn, when there's much work to be done caching food and building dams.



Beavers: The Bad Boys of Nature

Beavers have developed a “bad reputation” with many landowners, said MDC Wildlife Damage Biologist Joe DeBold. But he feels the general public’s negativity toward beavers can be unwarranted. When meeting with property owners, he often chats with them about the myriad of benefits beavers provide.

But there are situations when deterring or removing beavers is a reasonable course of action. If mature hardwoods, human habitation, or agricultural land is being threatened, those are circumstances where removing beavers makes sense, DeBold said.

“For the most part, beavers tend to feed on low-quality, bottomland trees — cottonwoods, honey locust — that have little to no value for logging,” he said. “Beavers will avoid eastern black walnuts, which do have value, probably because those trees excrete an unpleasant chemical. I often tell landowners, ‘The beavers are doing you a favor because they’re weeding out low-quality timber.’”

Pond owners often are certain beavers will damage their dams. DeBold tries to quell their fears. It doesn’t always happen and when it does, it’s possible to discourage the mammals with “beaver deceivers,” metal cages that cover a pipe. Often constructed from tightly woven wire panels, these baffles frustrate the beaver and prevent the animal from blocking the pipe’s flow.

“Flooding can be an issue,” DeBold said.

The most effective way to head off beaver-related flooding problems is to hire a fur trapper to remove these mammals. Conibear traps and live-catch foothold traps are two common solutions, he noted. “I either offer technical assistance to help the landowner weigh his or her options. Or I recommend a local fur trapper from within the same county to do the work,” he said.

Beavers and Humans: It’s Complicated

Beavers and humans have a complicated history.

In primitive times, perhaps 60 million beavers lived throughout most of North America. But the search for beaver pelts to be fashioned into high hats was one of the inducements for the exploration of the continent. By 1900, because of extensive trapping and other by-products of civilization, most beavers were extirpated throughout much of their former range. But restorations, protection, and management by conservationists helped reestablish this species throughout North America.

In Missouri, prior to the Civil War, beavers were common in every watershed. But by 1895, only a few colonies remained. The repopulation of the Missouri River and its tributaries in north Missouri is a result of colonization by either the original population or by migrants further upstream. Most of the beavers now living in southern Missouri presumably are the descendants of only six pairs purchased from Minnesota and released in 1928 and 1929. Some beavers in southwest Missouri may have migrated in from the west.

From 1939 to 1955, a continuous program of trapping beavers from places of heavy population and releasing them in areas with low or no population resulted in the reestablishment of this species throughout all the waters of the state. ▲

Kristie Hilgedick serves as the ombudsman for the Missouri Department of Conservation, writing responses to the inquiries that come in through Ask MDC. She also writes the Ask MDC column for the Missouri Conservationist.



To prevent flooding and property damage, beaver trapping is sometimes necessary.

Shooting the



FIRE TOWERS IN MISSOURI
by Holly Dentner

Smoke



Prior to the creation of the Missouri Conservation Commission in 1936, wildfires often spread uncontrolled across the Missouri Ozarks. It was estimated that nearly a third of the Ozarks burned each year. Wildfire and overharvest of timber left Missouri's forests in bad shape.

Conservation advocates realized that controlling wildfire was essential to the recovery and overall health of Missouri's forests. Once the Department of Conservation was formed, George O. White took the role of state forester and began the work of restoring and protecting the Ozarks.

Fire Towers 101

Fire towers were the most effective method of fire detection for decades. In 1941, there were 15 towers owned by MDC. In 1966, MDC operated 102 fire towers, and the U.S. Forest Service operated 43 in Missouri.

Towers ranged from 60 to 120 feet tall, and the style and elevation depended on cost, availability, site elevation, and surrounding topography. Most of Missouri's fire towers were 100 feet tall and manufactured by Aermotor Company of Chicago. Some towers had catwalks that surrounded the cab at the top. Most were made from steel, but early towers were made of wood. Twelve towers were acquired as surplus military property after having served as observation towers during World War II. A few were former oil derricks with steel ladders instead of stairs. Some did not have cabs at all, but just a platform on top to watch for smoke.

Fire towers were located on high elevations where they provided a 360-degree view of the surrounding country. From the towers, towermen were able to see smoke from wildfires, and then either take action to suppress the fire themselves or report the fire location to other personnel.

Preserving the Memories

Before Forestry Management Chief Mike Hoffman retired from MDC in 2014, he hired two forestry staff retirees to help him with a project he had been thinking about for a long time.

The project documented the history of Missouri's fire towers and the experiences of the people who spent their careers perched 100 feet in the air, keeping their eyes peeled for smoke on the skyline. What better way to learn about fire tower history

than to hear directly from those employees? Hoffman and his team interviewed over 30 employees and recorded their stories. What is captured here are just a few snippets from the hours of audio recordings, highlighting decades of service from dedicated employees.

A Day in the Life at a Fire Tower

Don Rittenhouse

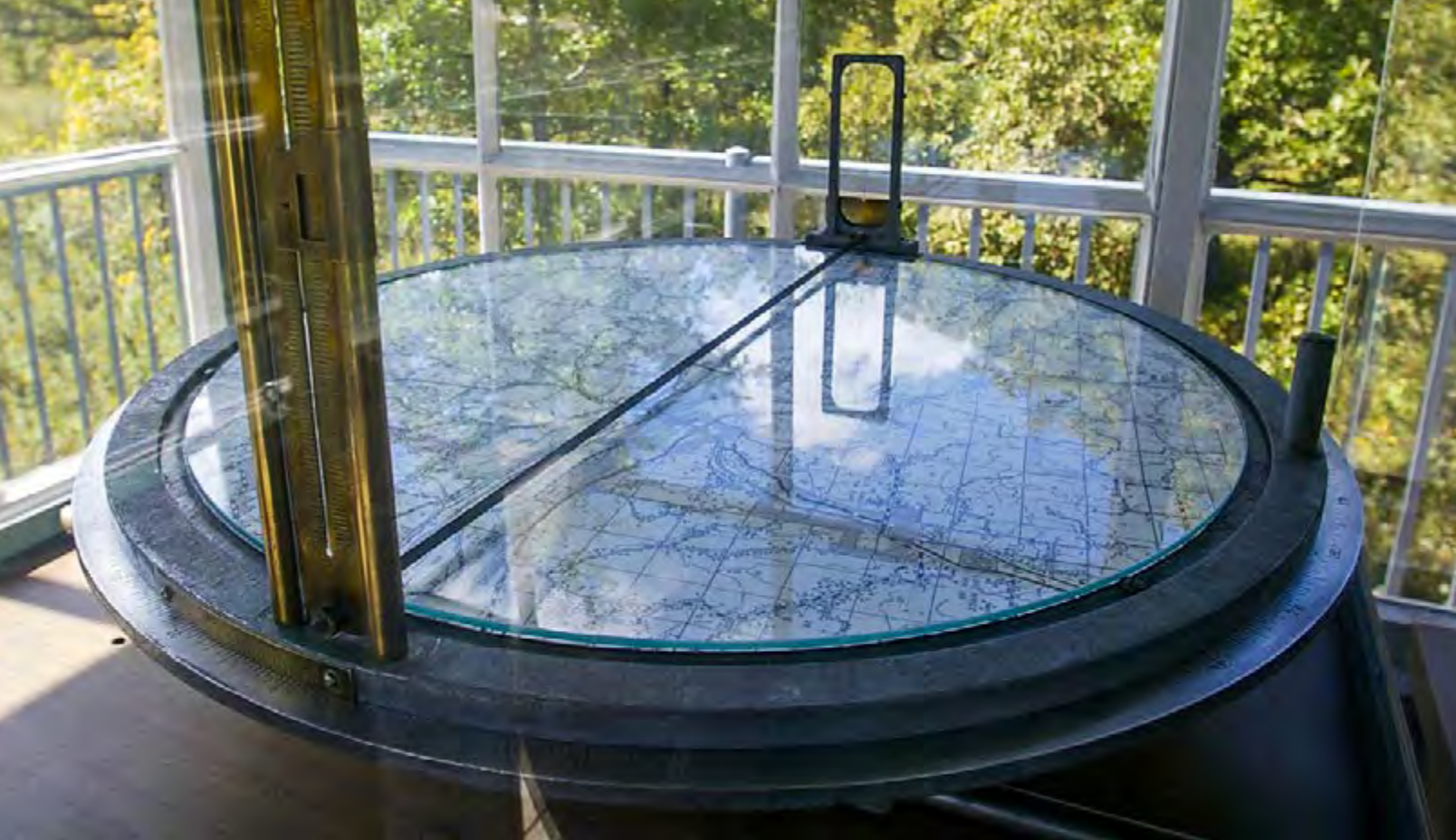
During a typical day in the tower, you saw some smoke, you'd take "a shot on it" by getting a compass reading on an Osborne fire finder. It had an azimuth circle that turned, with a sight on it like a rifle. You'd line it up on the smoke and get a reading and call it in to the dispatcher at the office. The dispatcher had a district map with all the towers. There were strings you could pull from the border of the district map. The dispatcher would get readings from two towers, mark them with the string, where those strings crossed was the location of the fire, within about a 40-acre area. We could shoot it close enough that you wouldn't have trouble finding it.



The towerman's typical day started at 8 a.m., with a radio check from his truck or up in the tower. On a busy day he might climb the tower a half dozen times if called out to help with fires.

Bob Aubuchon

When we talk about "clearing a tower," it means someone has to go up and take a look from the tower to make sure the fire we're working on hasn't broken out across the fire line behind us. Sometimes when we clear a tower, it's to go up and look around and make sure the surrounding country is clear from wildfire. A lot of times you can tell the difference between a controlled



The Osborne fire finder is used to take a shot on the fire and determine its location. The map, sights, and azimuth circle allow the user to accurately estimate the heading, elevation, and distance of the fire from the tower.

burn or a wildfire just by the nature of the smoke. Not only the color of the smoke, but the volume — if it's boiling up, if the width is getting wider — that's a sign it's probably out of control.

Charlie Santuff

I grew up in Reynolds County, about a mile from the Panther Hill lookout tower. My dad worked on fire duty for the department for many years. When I was about 10 or 12, my dad started taking me up in the tower. It was a 65-foot wooden tower with a catwalk around the cab. By the time I was 14 or so, I was manning the tower when the crew would take a fire run. They'd pay me 35 cents an hour, but I didn't have a social security card, so they put it on my dad's check. I continued working during fire seasons through high school, when I decided I wanted to be a forester. I got my degree from MU and worked for the department for 33 years.



MDC Crew Leader Jim Hurt checks the Osborne fire finder at the Blue Slip Tower in Wright County. MDC still uses towers to keep an eye on wildfires, but some now serve as radio towers, too.

Bob Aubuchon

Ed Christopher was a towerman for about 38 years. Ed often worked the Kelleter tower as a team with his wife, Wilma. It wasn't uncommon for Wilma to go up in the tower and clear it if Ed was out working on a fire. In early days, Ed would take a shot from the Kelleter tower, drive over to the Lone Hill or Onyx Hill towers and take another shot, cross the fire out himself, and then go out and fight the fire.



Shenanigans, Vandals, and Odd Occurrences

Darrell Burkhardt

I worked on the Meramec District starting in 1967. I lived with my wife at the lookout tower, which had its own tower house. Every so often I'd wake up in the middle of the night because kids would climb up in the tower and make lots of noise. They'd be up there screaming and hollering, and I'd have to go tell them to quiet down and leave. I never had any serious problems, as most people were very courteous.

One night I was working dispatch and there was a pretty good-sized fire. The phone rang, and the person said he was "Major So-and-So" from NORAD in Colorado Springs. He said one of their satellites had picked up a large heat source south-east of my location. I relayed that it was a large, controlled fire and the guy thanked me and hung up. Once I got to thinking about it, I almost fell out of my chair. That was back in the day when you didn't really think about satellites circling around and tracking everything.

Duane Parker

The funniest situation I ever encountered was at the Bloomfield tower in the Bootheel. When I arrived, I discovered it had been painted from top to bottom in a rainbow of colors. Every step, every landing was a different color of enamel paint.

The artists had carefully initialed their work on the top step. Since it was close to graduation time, I stopped by the Bloomfield School District office to see if the superintendent recognized the initials. He did, and the two students confessed once they were brought to the office. They spent the next month of weekends removing paint from the tower. They used hundreds of sanding discs, tons of brushes and scrapers, and paint remover, and they cleaned it all. It probably looked better than it had for years when they were finished..

The Worst Fire in Memory

Darrell Burkhardt

The worst fire season was the summer of 1980. It started in the fall of 1979, because we didn't get any fall rain, very little snow that winter. But by the end of June, everything was dry as popcorn. We had some days in Neosho with single digit humidity, and that's just unheard of in this part of the country. We'd see farmers brush-hogging, and they'd hit a rock and it would spark and set the grass on fire. Lightning would strike the ground and set fields on fire. That was stuff that just didn't normally happen. One stretch that summer we worked seven weeks without a day off.

While the Mineola fire tower is long gone, existing towers are generally off limits to visitors. Look for signage at each tower site to see if it is open or closed for climbing.

Don Rittenhouse

We had a lot of them in the 1950s and 1960s. The fire in 1980 was probably the worst. We called it Black Tuesday. We had a fire south of Hollister, on the east side of the railroad track with a southwest wind behind it. Fuel was bluestem, cedars, lots of dead snags, timber, all uphill. We had practically every unit on the district there. The property was 7,200 acres, and 3,100 acres burned until we got it corralled.

Equipment and Changing Technology

Dave Fenstermaker

You'd communicate back and forth with two-way radios. They weren't like they are now — there was just one frequency for each radio, one radio channel for each district. They were mounted in the tower's cab because they weighed about 100 pounds each. Later on, we got handheld portables, but they still weighed 30 pounds. They were heavy to carry around, but you could take them home with you. The wife and kids would get aggravated because it would rattle on all night long.

Fire Towers Today

Many fire towers, especially wooden ones, were taken down in the 1980s as the wood decayed and aircraft were used more often for fire detection. In fact, by 1970, fire towers only accounted for about 40 percent of detected wildfires throughout the state. By the 1990s, that dropped to less than five percent.

Fire towers have not only been replaced by aircraft and cell phones, but the need for them has also declined, as Missourians do a much better job of landscape management and fire prevention. Landowners understand the value of forest management, prescribed burns, and other efforts to keep wildfire from happening in the first place. Local volunteer fire departments have access to training and equipment that prepare them for a quick response to wildfire.

MDC still has about 50 fire towers on department property, but they no longer need full-time staffing during fire season. In fact, most staff may only climb a tower a few times per year, on high-risk days or as needed to help pinpoint a fire location.

From the late 1930s through the 1960s, fire towers were the most important tool for fire detection in Missouri. Managing the health of Missouri's forests and woodlands was not possible without controlling the rampant wildfires in the state. In a way, these towers are responsible for the healthy forests we enjoy today. ▲

Holly Dentner is a natural resources communications specialist for the department. Her favorite tree is the sassafras, and she credits Smokey Bear for her lifelong respect for fire prevention.



Learn More

Bob Frakes has had a passion for the history of Missouri's fire towers for years. Frakes collected photos of fire towers, equipment, and some personal stories from the families who worked the towers in his book, *Remembering Missouri's Lookout Towers: A Place Above the Trees*. He also helps maintain an online Google map of Missouri's fire towers, which can be found by searching for *Missouri Fire Towers Active Map*. For more information, visit short.mdc.mo.gov/4i4.

Get Outside

in JULY → Ways to connect with nature



Blackberry

Ready to Travel

Watch for young hummingbirds at your feeders. Noticing more hummingbirds at your feeders? They're fueling up for migration. Help them on their way by offering plenty of nectar. To make nectar, mix one part white table sugar with four parts water.

Remember, the liquid does not need to be red.

Warblers are also preparing for their trip south for the winter. To help them make the miles-long journey, warblers begin to gain weight for energy. Warblers are insect eaters, but you can help attract them to your feeders by offering mealworms, sunflower chips, and suet. For more information, visit our online *Field Guide* at mdc.mo.gov/field-guide.



Ruby-throated hummingbird



Yellow-rumped warbler

Beat the Summer Heat

Missouri is a great place to fish! Here are two ways to beat the heat while angling for some tasty table fare:

- Try night fishing for crappie. All you need is a flashlight, a pole, and bait. Browse places to fish at mdc.mo.gov/atlas.
- Wade a cool Ozark stream and fish for smallmouth bass. Move slowly so you don't spook wary fish. Cast a crayfish lure, plastic worm, or tube jig into the deep, flowing water around boulders or under a snag. Let the lure sink and then twitch your rod as you reel in the lure. With any luck, you'll soon feel the explosive tug of a hungry smallmouth on the end of your line.



Natural Events to See This Month

Here's what's going on in the natural world.



Black-eyed Susans bloom



American goldfinches begin nesting



Katydids sing

KANSAS CITY REGION

Free Day at the Range

Saturday • July 23 • 10 a.m.-4 p.m.

Lake City Shooting Range

28505 E. Truman Road, Buckner, MO 64016

No registration required. Call 816-249-3194 or visit short.mdc.mo.gov/4io for more information.

Bring the family out for a free day of shooting.

Nature's Sweet Treat

Blackberries ripen in July. Pick some to make this easy blackberry pie recipe at short.mdc.mo.gov/ZN9.

Too hot to heat up the oven? Try blackberry ice cream! In a food processor, blend 2 cups of blackberries, 1 cup of sugar, and ½ cup of water. Pour the mixture through a strainer into a glass bowl. Mix in ½ cup of heavy cream. Chill the mixture in your refrigerator for an hour, pour it into an ice cream maker, and soon you'll have a berry yummy treat.

Checking for Chanterelles

If you're taking a hike in the woods, look for chanterelle mushrooms. Chanterelles are bright orange or yellow, funnel- or trumpet-shaped, and have wavy cap edges. A favorite of European chefs, they are becoming more popular in the United States. You can preserve chanterelles by sautéing them, then freezing.



Chanterelle



Rattlesnakes hunt at night



Fox and gray squirrels bear litters

RECONNECT WITH NATURE

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Places to Go

ST. LOUIS REGION

Victoria Glades Conservation Area

Where the early bird gets the sunrise

by Larry Archer

✳ July can be a tough time to get outside, but Victoria Glades Conservation Area (CA) in Jefferson County offers visitors an additional reason to get out early and beat the heat — exceptional sunrises.

At just short of 240 acres, Victoria Glades CA is small by comparison, but its mixture of glades and woodlands provide plenty of openings through which to catch the rising sun, said Regional Resource Management District Supervisor Raenhard Wesselschmidt.

“You should be able to look over that glade and have some pretty good sunrise views across that open valley,” Wesselschmidt said.

Come for the sunrise, stay for the wildflowers.

“At that time, there’s probably going to be quite a bit of things blooming out there,” he said. “So, a lot of your wildflowers, your coneflowers and black-eyed Susans, all that kind of stuff. You should be getting into that blooming phase on a lot of those different wildflowers.”

The area’s 2.3-mile trail gives hikers the best of both habitats.

“It’s going to be some steep and kind of rocky terrain up and down,” he said. “It comes through the glade, but then it also has quite a bit of forested areas that it runs through.”



Pale spiked lobelia



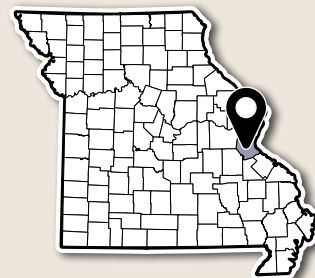
“It’s not one of our biggest areas, but it’s definitely a neat area as you get into that glade complex.”

—Victoria Glades CA Regional Resource Management District Supervisor Raenhard Wesselschmidt

NORPADOL PACHTONG



American blueheart



VICTORIA GLADES CONSERVATION AREA

consists of 239.3 acres in Jefferson
County. From Hillsboro, take Victoria
Road southeast 1.5 miles.

38.2031, -90.543

short.mdc.mo.gov/4ie

636-441-4554

WHAT TO DO WHEN YOU VISIT



Birdwatching The eBird list of birds
recorded at Victoria Glades CA is
available at short.mdc.mo.gov/4iP.



Hiking 2.3-mile loop trail through
woodlands and glades.

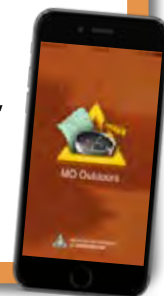


Hunting Deer and turkey
Regulations are subject to annual changes.
Refer to MDC's regulation page online at
short.mdc.mo.gov/Zjw for regulations.

Also **squirrel**

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WHAT TO LOOK FOR WHEN YOU VISIT



White-tailed deer



American kestrel



Prairie kingsnake



Indigo bunting



Owlfly

Ascalaphidae family

Status
Common

Size
Length: to about 2 inches; wingspan: to about 3 inches; antennae: about 1 inch long

Distribution
Statewide



Did You Know?
The owlfly family name, Ascalaphidae, comes from Greek mythology. In addition, some species of adult owlflies glue sand or other debris to their back for camouflage.

Owlfly look like dragonflies with butterfly heads. Dragonfly shaped and sized, they have long, clubbed antennae and large, bulging eyes. Some rest with their abdomens angled away from the perch, making their bodies look like twigs. There are eight species of owlflies in North America, with two being found in Missouri. They are distinguished by looking at their eyes. Active from dusk to dawn, owlflies are attracted to lights during the summer months.

LIFE CYCLE

Female owlflies lay two batches of eggs. One batch is fertile and laid in a line on twigs of trees. The other batch, known as trophic eggs, is laid nearby. These won't hatch but serve as a first meal for the hatchlings. Plus, these trophic eggs will keep the newborns from eating each other. The young larvae move to the ground, where they hunt, eat, grow, and molt. They pupate, in a silky cocoon, in leaf litter.

FOODS

Owlfly are predators, snatching insects midair. The larvae are also predators, using their powerful little jaws to capture insects and other tiny animals in leaf litter.

ECOSYSTEM CONNECTIONS

Owlfly serve as natural pest control, helping to limit populations of the insects on which they prey.

Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖



FISHING

Black Bass

Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:

- ▶ Catch-and-Keep:
May 28, 2022–Feb. 28, 2023

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2022

Nongame Fish Gigging

Impounded Waters, sunrise to sunset:
Feb. 16–Sept. 14, 2022

Streams and Impounded Waters,
sunrise to midnight:
Sept. 15, 2022–Feb. 15, 2023

Paddlefish

On the Mississippi River:
Sept. 15–Dec. 15, 2022

Trout Parks

State trout parks are open seven days a week
March 1 through Oct. 31.

Catch-and-Keep:
March 1–Oct. 31, 2022

Catch-and-Release:
Nov. 11, 2022–Feb. 13, 2023

HUNTING

Black Bear*

Oct. 17–26, 2022

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2022

Coyote

Restrictions apply during April, spring turkey
season, and firearms deer season.

Open all year

Crow

Nov. 1, 2022–March 3, 2023

Deer

Archery:

Sept. 15–Nov. 11, 2022

Nov. 23, 2022–Jan. 15, 2023

Firearms:

- ▶ Early Youth Portion (ages 6–15):
Oct. 29–30, 2022
- ▶ November Portion:
Nov. 12–22, 2022
- ▶ Late Youth Portion (ages 6–15):
Nov. 25–27, 2022
- ▶ Antlerless Portion (open areas only):
Dec. 3–11, 2022
- ▶ Alternative Methods Portion:
Dec. 24, 2022–Jan. 3, 2023

Dove

Sept. 1–Nov. 29, 2022

Elk*

Archery:

Oct. 15–23, 2022

Firearms:

Dec. 10–18, 2022

Groundhog (Woodchuck)

May 9–Dec. 15, 2022

Pheasant

Youth (ages 6–15):

Oct. 29–30, 2022

Regular:

Nov. 1, 2022–Jan. 15, 2023

Quail

Youth (ages 6–15):

Oct. 29–30, 2022

Regular:

Nov. 1, 2022–Jan. 15, 2023

Rabbit

Oct. 1, 2022–Feb. 15, 2023

Sora, Virginia Rails

Sept. 1–Nov. 9, 2022

Squirrel

May 28, 2022–Feb. 15, 2023

Teal

Sept. 10–25, 2022

Turkey

Archery:

Sept. 15–Nov. 11, 2022

Nov. 23, 2022–Jan. 15, 2023

Firearms:

- ▶ Fall: Oct. 1–31, 2022

Waterfowl

See the Migratory Bird and Waterfowl
Hunting Digest or visit short.mdc.mo.gov/ZZx
for more information.

Wilson's (Common) Snipe

Sept. 1–Dec. 16, 2022

Woodcock

Oct. 15–Nov. 28, 2022



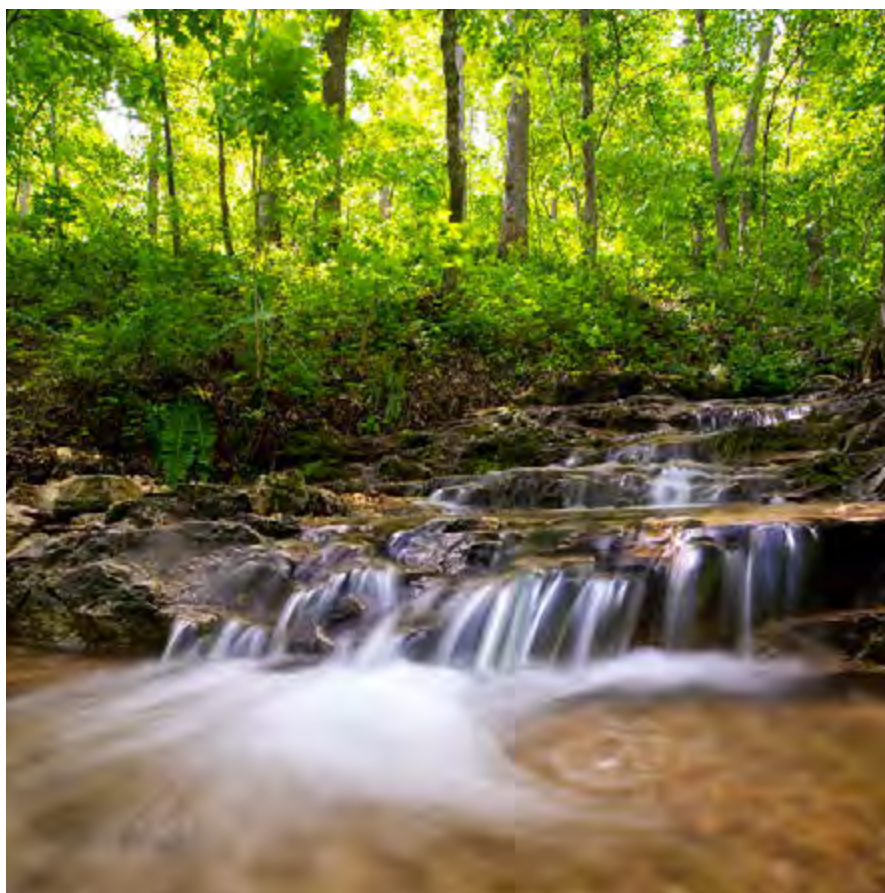
Free MO Hunting and MO Fishing Apps

MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at short.mdc.mo.gov/Zi2.

**Only hunters selected through a random drawing may participate in these hunting seasons.*

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Zib.

Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at short.mdc.mo.gov/ZZf.



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By July, summer temperatures have settled in across Missouri, but don't let the heat keep you indoors. Beat the heat by incorporating water into your outdoor adventures. This scenic waterfall at Bull Creek, Taney County, is an inviting place to explore. What will you discover in Missouri waterways?

📷 by **Noppadol Paothong**